UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/322,472	05/28/1999	JOYDIP KUNDU	ORA99-04(OID	8046

21005	7590	12/01/2004		

HAMILTON, BROOK, SMITH & REYNOLDS, P.C.
530 VIRGINIA ROAD
P.O. BOX 9133
CONCORD, MA 01742-9133

EXAMINER
VAUGHN JR, WILLIAM C

ART UNIT	PAPER NUMBER
2143	

DATE MAILED: 12/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 July 2004*.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-67* is/are pending in the application.

     4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *51 and 52* is/are allowed.

6)☒ Claim(s) *1-3,5,7-15,17,19-27,29-34,36,37,39-43,45-47,49,50 and 53-67* is/are rejected.

7)☒ Claim(s) *4,6,16,18,28,35,38,44 and 48* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a)☐ All   b)☐ Some * c)☐ None of:

        1.☐ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____.

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

     * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date *08 July 2004*.

4)☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____ .

DETAILED ACTION

1.   This Action is in regards to the Amendment and Response received on 08 July 2004.

Response to Arguments

2.   Applicant's arguments and amendments filed on 08 July 2004 have been carefully

considered but they are not deemed fully persuasive. Applicant's arguments are deemed moot in

view of the following new grounds of rejection as explained here below, necessitated by

Applicant's substantial amendment (i.e., *accessing, by a member node, the cluster definition on*

the shared repository, regardless of network connectivity...) to the claims which significantly

affected the scope thereof.

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

4.   **Claims 1, 7-9, 11-13, 19-21, 29-33, 39-41, 45-47, 50 and 53** are rejected under 35 U.S.C.

103(a) as being unpatentable over Alfieri et al. (Alfieri), U.S. Patent No. 5,666,486 in view of

Lennie et al. (Lennie), U.S. Patent No. 6,092,213 and in further view of DeKoning et al.

(DeKoning), U.S. Patent No. 6,073,218.

5.   Regarding **claim 1**, Alfieri discloses the invention substantially as claimed. Alfieri

discloses *a method for maintaining a cluster definition for a network cluster having at least one*

member node [see Alfieri, Col. 1, lines 57-67 and Col. 2, lines 1-64], *the method comprising:*

coupling each member node to a shareable repository [see Alfieri, Col. 3, lines 33-54]; *storing a*

cluster definition for the network cluster in the shareable repository [see Alfieri, Col. 3, lines 65-

67 and Col. 4, lines 1-34]; *accessing, by each member node in the network cluster, the current*

cluster definition at the single location in the shared repository [see Alfieri, Col. 18, lines 33-

42]; *selecting a coordinator node from one of the member nodes of the network cluster* (Alfieri

teaches a cluster master node for coordinating cluster activity), [see Alfieri, Col. 6, lines 23-30];

a member node requesting a change to the cluster definition [see Alfieri, Col. 4, lines 63-67, Col.

5, lines 1-43]. However, Alfieri does not explicitly disclose the coordinator node updating the

cluster definition to reflect the requested change.

6.   In the same field of endeavor, Lennie discloses (e.g., a computing system in the form of a

cluster of a number of multiprocessing nodes). Lennie discloses the coordinator node updating

the cluster definition to reflect the requested change [see Lennie, Col. 2, lines 65-67].

7.   Accordingly, it would have been obvious to one of ordinary skill in the networking art at

the time the invention was made to have incorporated Lennie's teachings of a computing system

in the form of a cluster of a number of multiprocessing nodes with the teachings of Alfieri, for

the purpose of offering high levels of fault tolerance and high availability in software via

clustering [see Lennie, Col. 2, lines 21-34]. However, Alfieri-Lennie does not explicitly disclose

accessing, by a member node, the cluster definition on the shared repository, regardless of

network connectivity.

8.   In the same field of endeavor, DeKoning discloses (e.g., methods and apparatus for

coordinating shared multiple RAID controller access to common storage devices. DeKoning

discloses *accessing, by a member node, the cluster definition on the shared repository,*

regardless of network connectivity [see DeKoning, Col. 3, lines 19-21].

9.   Accordingly, it would have been obvious to one of ordinary skill in the networking art at

the time the invention was made to have incorporated DeKoning's teachings of a methods and

apparatus for coordinating shared multiple RAID controller access to common storage devices

with the teachings of Alfieri-Lennie, for the purpose of providing improved storage controller

architecture for improved scalability by shared access to storage devices to further enable

parallel processing of multiple I/O requests [see DeKoning, Col. 3, lines 3, lines 1-3].   By this

rationale **claim 1** is rejected.

10.   Regarding **claim 7**, Alfieri-Lennie and DeKoning discloses *comprising: recovering from*

a failure of the coordinating node [see Lennie, Col. 3, lines 10-14]. By this rationale **claim 7** is

rejected.

11.   Regarding **claim 8**, Alfieri-Lennie and DeKoning discloses wherein recovering includes:

selecting a new coordinator node from the member nodes of the network cluster [see Lennie,

Col. 3, lines 10-14], completing, by the new coordinator node, an update of the cluster definition

to reflect the requested change if there is a set valid bit and an incomplete log file [see Lennie,

Col. 6, lines 3-6] in the shareable repository [see Lennie, Col. 4, lines 14-18]. By this rationale

claim 8 is rejected.

12.   Regarding **claim 9**, Alfieri-Lennie and DeKoning discloses *wherein completing an*

update includes: reading the incomplete log file [see Lennie, Col. 6, lines 13-15]; *and continuing*

the update of the cluster definition from a point, as indicated by the incomplete log file, where

the coordinating node cease updating the cluster definition due to the failure of the coordinating

node [see Lennie, Col. 3, lines 14-18, 38-40]. By this rationale **claim 9** is rejected.

13.   Regarding **claim 11**, Alfieri-Lennie and DeKoning *discloses an apparatus for updating a*

cluster definition for a network cluster having at least one member node, comprising: a shared

repository coupled to each member node of the network cluster [see Alfieri, Col. 3, lines 46-67],

the repository including the current cluster definition where each member node of the cluster

accesses the current cluster definition at a single location in the shared repository [see Alfieri,

Col. 3, lines 64-66] *and a proposed change to the cluster definition to the current cluster*

definition sent to the shared repository by one of the member nodes [see Alfieri, Col. 3, lines 65-

67 and Col. 4, lines 1-2]; *and a coordinator node, selected from one or the member nodes of the*

network cluster, to update the current cluster definition with the proposed change [see Lennie,

Col. 2, lines 65-67]. By this rationale **claim 11** is rejected.

14.   Regarding **claim 12**, Alfieri-Lennie and DeKoning discloses a log file, indicating a

progress of updating the cluster definition (Lennie teaches a master audit log), [see Lennie, Col.

3, lines 38-40]. By this rationale **claim 12** is rejected.

15.   **Claim 13** is a product or manufacture claim corresponding to the apparatus claim 11;

therefore claim 13 is rejected under the same rationale.

16.   **Claims 19-21** list all the same elements of **claims 7-9**, but in computer program product

form rather than method form. Therefore, the supporting rationale of the rejection to **claims 7-9**

applies equally as well to **claims 19-21**.

17.   **Claims 29-31** are substantially the same as claims 7-9 and are thus rejected for reasons

similar to those in rejecting claims 7-9.

18.   **Claim 32** list all the same elements of claim 1, but in system form rather than method

form. Therefore, the supporting rationale of the rejection to claim 1 applies equally as well to

claim 32.

Claim 33 is substantially the same as claim 1 and is thus rejected for reasons similar to those in

rejecting claim 1.

Claims 39 and 40 are substantially the same as claims 7-9 and are thus rejected for reasons

similar to those in rejecting claims 7-9.

Claim 41 lists the same elements of claims 33, but in apparatus form rather than method form.

Therefore, the supporting rationale of the rejection to claim 33 applies equally as well to claims

41.

Claim 45 is substantially the same as claim 29 and is thus rejected for reasons similar to those in

rejecting claim 29.

Claim 46 is substantially the same as claim 1 and is thus rejected for reasons similar to those in

rejecting claim 1.

Claim 47 is substantially the same as claim 5 and is thus rejected for reasons similar to those in

rejecting claim 7.

Claim 50 and 53 are substantially the same as claim 1 and are thus rejected for reasons similar

to those in rejecting claim 1.

Claim Rejections - 35 USC § 103

19.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

20.   **Claims 2, 3, 10, 14, 15, 22, 23, 34, 36, 42** are rejected under 35 U.S.C. 103(a) as being

unpatentable over Alfieri-Lennie and DeKoning as applied to claims 1, 2, 3, 11, 13, 33, 41

above, and further in view of Slaughter et al. (Slaughter), U.S. Patent No. 6,014,669.

21.   Regarding **claim 2,** Alfieri-Lennie and DeKoning discloses the inventions substantially

as claimed. However, Lennie does not explicitly disclose wherein requesting a change to the

cluster definition includes: sending a proposed change to a scratch area; and setting a valid bit

associated with the scratch area.

22.   In the same field of endeavor, Slaughter discloses (e.g., a cluster configuration database).

Slaughter discloses *wherein requesting a change to the cluster definition includes: sending a*

proposed change to a scratch area; and setting a valid bit associated with the scratch area

(Slaughter teaches local consistency records within the cluster configuration database of each

member node to a specific area of the database and a flag is used to indicate the database has

been restored to a corresponding valid bit. Also, Slaughter further teaches that the consistency

record stores a checksum and length of the configuration database which is used to validate the

local configuration database copy to ensure that the configuration database has not been

corrupted), [see Slaughter, Col. 10, lines 16-17, 64-67 and Col. 11, lines 1-13].

23.   Accordingly, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to have incorporated Slaughter's teachings of a cluster configuration

database with the teachings of Alfieri-Lennie and DeKoning, for the purpose of surviving and

recovering crashes by utilizing a scratch area and associated valid bit because they certify that

the local cluster configuration of each member node is not corrupt. By this rationale **claim 2** is

rejected.

24.   Regarding **claim 3**, Alfieri-Lennie and DeKoning, Slaughter discloses *wherein updating*

the cluster definition includes: verifying the valid bit (Slaughter teaches checking validity), [see

Slaughter, Col. 10, lines 41-67 and Col. 11, lines 1-13]; *setting an update flag* [see Slaughter,

Col. 6, lines 21-26 and Col. 12, lines 10-11]; *modifying the cluster definition to reflect the*

requested change [see Slaughter, Col. 9,lines 25-27]; *logging a progress of modifying the cluster*

definition in a log file in parallel with modifying the cluster definition [see Lennie, Col. 3, lines

2-7]; *incrementing a version number associated with the shareable repository* [see Slaughter,

Col. 9, lines 27-29]; *and clearing the valid bit and the update flag* (Slaughter teaches remove and

update command corresponds to operations to performed on the synchronization command of

which a flag may be set as indicia), [see Slaughter, Col. 12, lines 21-23]. By this rationale **claim**

3 is rejected.

25.   Regarding **claim 10**, Alfieri-Lennie and DeKoning, Slaughter teach the invention

substantially as claimed as noted above. Alfieri-Lennie and DeKoning, Slaughter further teach

the step of: re-requesting, by the member node, the change to the cluster definition if after a

period of time, the change is not made to the cluster definition.

26.   **Claims 14 and 15** list all the same elements of **claims 2 and 3**, but in computer program

product form rather than method form. Therefore, the supporting rationale of the rejection to

claims 2 and 3 applies equally as well to **claims 14 and 15**.

27.   **Claim 22** is substantially the same as claim 10 and is thus rejected for reasons similar to

those in rejecting claim 10.

28.   Regarding **claim 23**, Alfieri-Lennie and DeKoning, Slaughter discloses wherein the

proposed change is stored in a scratch area of the shared repository [see Slaughter, Col. 10, lines

16-67 and Col. 11, lines 1-13]. By this rationale **claim 23** is rejected.

29.   **Claim 34** is substantially the same as claims 2 and are thus rejected for reasons similar to

those in rejecting claims 2.

30.   **Claim 36** is substantially the same as claim 10 and is thus rejected for reasons similar to

those in rejecting claim 10.

31.   **Claim 42** is substantially the same as claim 36 and is thus rejected for reasons similar to

those in rejecting claim 36.

Claim Rejections - 35 USC § 103

32.   **Claims 5, 17, 27, 37, 43, 47** are rejected under 35 U.S.C. 103(a) as being unpatentable

over Alfieri-Lennie and DeKoning, Slaughter as applied to claims 1, 11, 13, 33, 41, 46 above,

and further in view of Slaughter et al. (Slaughter), U.S. Patent No. 5,964,886.

33.   Regarding **claim 5**, Alfieri-Lennie and DeKoning, Slaughter discloses the invention

substantially as claimed. However, Alfieri-Lennie does not explicitly disclose comprising

requesting, by a potential member node, membership in the network cluster; and accessing, by

the potential member node, the cluster definition.

34.   In the same field of endeavor, Slaughter discloses (e.g., highly available cluster virtual

disk system). Slaughter discloses *membership changes including a node joining a cluster and*

[see Slaughter, Col. 8, lines 46-47] *and each node of a cluster accessing the storage device of the*

cluster corresponding to a request for membership and accessing the cluster definition by a

potential member node [see Slaughter, Abstract lines 1-3].

35.   Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated Slaughter's teachings of a highly available cluster virtual disk system with the teachings of Alfieri-Lennie, to purpose of providing a request to join and access by a potential member node because it allows nodes to be added to a cluster without suspension in operation. By this rationale **claim 5** is rejected.

36.   **Claim 17** list all the same elements of **claim 5**, but in computer program product form rather than method form. Therefore, the supporting rationale of the rejection to **claim 5** applies equally as well to **claim 17**.

37.   **Claim 27** is substantially the same as claim 5 and is thus rejected for reasons similar to those in rejecting claim 5.

38.   **Claim 37** is substantially the same as claim 5 and is thus rejected for reasons similar to those in rejecting claim 5.

39.   **Claim 43** is substantially the same as claim 5 and is thus rejected for reasons similar to those in rejecting claim 5.

40.   **Claim 47** is substantially the same as claim 17 and is thus rejected for reasons similar to those in rejecting claim 17.

Allowable Subject Matter

41.   Claims 4, 6, 16, 18, 18, 35, 38, 44 and 48 are objected to as being dependent upon a

rejected base claim, but would be allowable if rewritten in independent form including all of the

limitations of the base claim and any intervening claims.

42.   Claims 51 and 52 are allowed.

Conclusion

43.   Applicant's amendment necessitated the new ground(s) of rejection presented in this

Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).
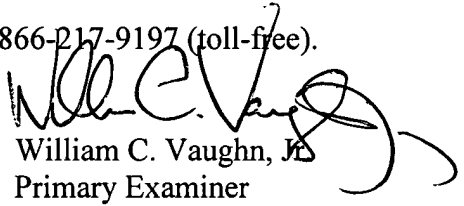
A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this

final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to William C. Vaughn, Jr. whose telephone number is (571) 272-

3922. The examiner can normally be reached on 8:00-6:00, 1st and 2nd Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, David A Wiley can be reached on (571) 272-3923. The fax phone number for the

organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

William C. Vaughn, Jr
Primary Examiner
Art Unit 2143

WCV